The Invention Claimed Is:

1. A method of creating a logical data volume in a consolidated storage array (CSA) which satisfies performance requirements for the logical data volume, the CSA comprising a plurality of storage arrays, each of the storage arrays having performance capabilities, the performance requirements for the logical data volume exceeding available performance capabilities of any single storage array, the CSA being connected to a host device executing data access software which uses the logical data volume, comprising the steps performed by the CSA of:

analyzing the storage arrays for their available performance capability in light of the performance requirements for the logical data volume;

selecting at least some of the storage arrays, a combined available performance capability of which is at least equal to the performance requirements for the logical data volume;

configuring the selected storage arrays for storage spaces for the logical data volume, the storage spaces of each selected storage array containing a portion of the logical data volume;

forming volume information describing the logical data volume, the storage spaces containing the logical data volume and the selected storage arrays; and

sending the volume information from the CSA to the host device for configuring the data access software to access the logical data volume.

2. A method as defined in claim 1 further comprising the steps of:

issuing a volume create command from the host device to the CSA to instruct the CSA to create the logical data volume in the storage arrays in the CSA;

receiving the volume information at the host device; and

configuring the data access software with the volume information of the logical data volume enabling the host device to access the logical data volume.

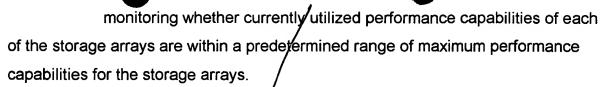3. A method as defined in claim 2 further comprising the step performed by the CSA of:

monitoring whether currently utilized performance capabilities of each of the storage arrays are within a predetermined range of maximum performance capabilities for the storage arrays.

4.   A method as defined in claim 3 for also managing data storage in the CSA, wherein the plurality of storage arrays includes first and second storage arrays, the first storage array containing one of the storage spaces for the logical data volume, further comprising the steps performed by the CSA of:

determining that the currently utilized performance capabilities of the first storage array is within the predetermined range of the maximum performance capabilities for the first storage array; and

migrating at least a portion of the one of the storage spaces for the logical data volume from the first storage array to the second storage array.

5.   A method as defined in claim 2 further comprising the step of:

specifying at least one of the bandwidth, transaction rate, redundancy or size of the logical data volume in parameters that describe the performance requirements for the logical data volume.

6.   A method as defined in claim 2, wherein the data access software includes data striping software, further comprising the step of:

striping the logical data volume across the selected storage arrays.

7.   A method as defined in claim 1 further comprising the steps of:

striping the logical data volume across the selected storage arrays; and

describing, in the volume information, a striping definition for a manner in which the logical data volume is striped across the selected storage arrays.

8.   A storage area network (SAN) having a host device connected to a consolidated storage array (CSA), the host device accessing data stored on the CSA and sending a volume create command to the CSA, the SAN comprising:

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a plurality of storage arrays each having a plurality of storage devices

5 containing the data, the storage arrays forming the CSA and each having available

performance capabilities;

a logical data volume distributed across the storage arrays and

contained on portions of the storage devices of the storage arrays, the logical data

volume containing the data, the logical data volume having performance

10 requirements that are higher than the available performance capabilities of each

individual storage array before the logical data volume is created on the storage

devices of the storage arrays, the performance requirements being specified by a

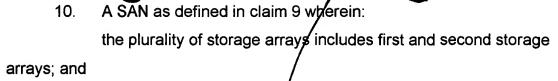user of the SAN and issued by the user through the host device to the CSA; and

a CSA primary device connected to the storage arrays and executing

15 volume create software to create the logical data volume on the storage devices in

the storage arrays in response to the volume create command sent by the host

device, the volume create command including the performance requirements of the

logical data volume, the CSA primary device further executing the volume create

software to analyze the available performance capabilities of the storage arrays

20 before the logical data volume is created on the storage devices in light of the

performance requirements of the logical data volume, the CSA primary device

further executing the volume create software to select the storage arrays for the

portions of the storage devices to contain the logical data volume, combined

performance capabilities of the selected storage arrays being at least equal to the

25 performance requirements of the logical data volume, the CSA primary device

further executing the volume create software to configure and distribute the logical

data volume across the selected storage arrays.

9.   A SAN as defined in claim 8 wherein:

each storage array has a maximum performance capability; and

the CSA primary device further executes performance monitoring

software to monitor the performance of the storage arrays to determine whether

5 any of the storage arrays is performing within a predetermined range of its

maximum performance capability.

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10. A SAN as defined in claim 9 wherein:

the plurality of storage arrays includes first and second storage arrays; and

the CSA primary device further executes volume migration software, upon a determination that the first storage array is performing within the predetermined range of its maximum capacity, to again analyze the performance capabilities of the storage arrays in light of the performance requirements of the logical data volume, and to migrate at least a portion of the data stored in the logical data volume from the first storage array to the second storage array.

11. A SAN as defined in claim 8 wherein:

the performance requirements of the logical data volume are specified by the user in the volume create command and include at least one of a bandwidth, transaction rate, redundancy or size of the logical data volume.

12. A SAN as defined in claim 8 wherein:

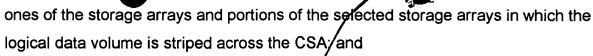the logical data volume is striped across the selected storage arrays; and

the volume information includes a striping definition for the logical data volume.

13. A method of creating a logical data volume in a storage area network having a host device and a consolidated storage array (CSA) including a plurality of storage arrays, comprising the steps of:

establishing parameters defining performance requirements of the logical data volume, the performance requirements exceeding available performance capabilities of any single storage array;

sending a volume create command containing the established parameters from the host device to the CSA instructing the CSA to create the logical data volume with the performance requirements;

receiving at the host device volume information from the CSA indicating that the CSA has created the logical data volume, the volume information including a striping definition of the logical data volume which describes selected

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ones of the storage arrays and portions of the selected storage arrays in which the logical data volume is striped across the CSA; and

15   configuring a host-based striping software with the striping definition of the logical data volume to enable the host device to access the logical data volume.

   14. A method for managing data storage in a storage area network having a host device connected to a consolidated storage array (CSA) including a plurality of storage arrays across which a logical data volume is stored on behalf of the host device, the logical data volume having performance requirements and the storage

5 arrays having a maximum performance capability, comprising the steps performed by the CSA of:

    monitoring for a data transfer performance of each of the storage arrays on which a portion of the logical data volume is stored; and

    determining whether the data transfer performance of each of the

10 storage arrays on which a portion of the logical data volume is stored is within a predetermined range of the maximum performance capability for each of the storage arrays.

   15. A method as defined in claim 14, wherein the plurality of storage arrays includes first and second storage arrays and the first storage array contains a portion of the logical data volume, further comprising the steps performed by the CSA of:

5   detecting that the data transfer performance of the first storage array is within the predetermined range of the maximum performance capability for the first storage array; and

    migrating at least a part of the portion of the logical data volume that is contained in the first storage array from the first storage array to the second

10 storage array.